

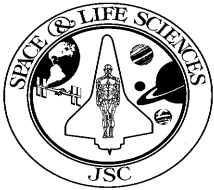
**Space and Life Sciences Directorate  
Flight Readiness Review  
STS-108/UF1**

**D. R. Williams**

**Date: November 15, 2001**

**STS-108/UF1  
Flight Readiness Review  
Space and Life Sciences Directorate**





**Space and Life Sciences Directorate  
Flight Readiness Review  
STS-108/UF1**

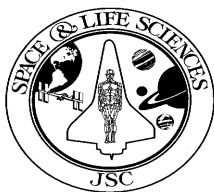
**D. R. Williams**

**Date: November 15, 2001**

**Space and Life Sciences Mission Activities**

- **Crew Health**
- **DSO's**
- **Open Items and In-flight Anomalies**
- **Radiation and Dosimetry Support**
  - **STS-108 Radiation Prediction**
  - **Increment 3/4 Radiation Prediction**
- **Readiness Statement**

**SLSD has no constraints to UF1/STS-108 launch**



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**Crew Health**

➤ **All Crew Physicals will be completed prior to flight**

- Applicable flight rules are in place

US Crew Surgeon

Rainer Effenhauser, M.D.

US Deputy Flight Surgeon

James Duncan, M.D.

Russian Surgeon (ISS-4)

Vladimir Matveev, M.D.

Russian Surgeon (landing)

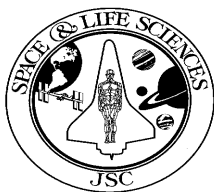
Yvgeney Kobzev, M.D.

ISS-3 Crew Surgeon

Steven Hart, M.D.

ISS-4 Crew Surgeon

Chris Flynn, M.D.



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**STS-108 DSO's**

**The following SLSD DSO's have been manifested or scheduled  
for STS-108/ ISS UF1**

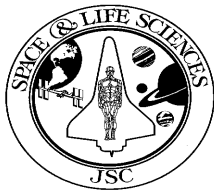
DSO 490 – Bioavailability and Performance Effects of Promethazine During Space Flight, Protocol B

DSO 498 - Space Flight and Immune Function (pre/postflight only)

DSO 500 - Space Flight-Induced Reactivation of Latent Epstein-Barr Virus (pre/postflight only)

DSO 503S - Test of Midodrine as a Countermeasure Against Postflight Orthostatic Hypotension (pre/postflight only)

DSO 632 - Pharmacokinetics and Contributing Physiologic Changes During Space Flight, Protocol B (pre/postflight only)



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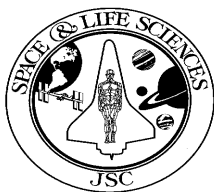
## **STS-108 Open Items and Inflight Anomalies (IFA's)**

- **All remaining open work is planned and scheduled**

**Open items for STS-108**

- **Crew Physicals**
- **L-3 day Space Weather Analysis**

- **No open SSP IFA's or constraints**



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**Radiation Analysis and Dosimetry Support**

**STS-108 Flight Specific Predictions**

- Nominal mission (10 d 19 hr 17 m) crew exposure projection
- **Mission Exposure**                      187 mrad              (522 mrem)
- **Daily Average Exposure:**              17.3 mrad/day      (48.3 mrem/day)

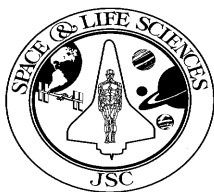
**Onboard Radioactivity (experiment name (# sources) – isotope – activity)**

- Fire detectors (all flights) -- orbiter (9) -- Am-241 → 6.12  $\mu$ Ci
- Operational TEPC (1) -- Cm-244 → 1.0  $\mu$ Ci
- HRF/H-Reflex/E082 – Ni-63 → 0.1  $\mu$ Ci

} No Crew Exposure

**– Radiation related hardware on this flight**

- **Personal Radiation Protection System (PRPS)**  
5 “close-out” bricks to complete TESS  
“flats” for contingency shelter on a “space available” basis



**Space and Life Sciences Directorate  
Flight Readiness Review  
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## **Radiation Analysis and Dosimetry Support, cont.**

### **EVA Exposures (additional skin exposure)**

- Additional exposure due to protons in SAA and electrons in outer electron belt

#### **EVA1 (start MET 004/19:00, 6.5 hr.)**

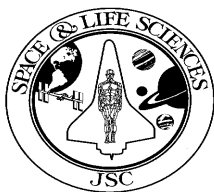
- |                   |                  |                    |                  |
|-------------------|------------------|--------------------|------------------|
| ▪ Nominal         | 60 mrad/ 60 mrem | • 1 hr early start | 35 mrad/ 35 mrem |
| ▪ 1 hr late start | 70 mrad/ 70 mrem | • 2 hr late start  | 70 mrad/ 70 mrem |

### **Contingency EVA Exposures (additional skin exposure)**

- **Worst case 6.5 hour EVA additional skin exposures:**
  - 6.5 hr 480 mrad/ 580 mrem

### **Nominal IVA Exposures**

- Daily 17 mrad / 50 mrem



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**Radiation Analysis and Dosimetry Support, cont.**

**Increment 3 Radiation Prediction**

**ISS-3 Radiation prediction (ISS-3 4 month nominal mission)**

- 2.77 rad/ 6.36 rem
- Daily average exposure 22 mrad/day (52 mrem/day)

**Increment 4 Radiation Prediction**

**ISS-4 Radiation prediction (ISS-4 nominal mission)**

- 2.54-2.82 rad/ 5.83- 6.48 rem
- Daily average exposure 18-20 mrad/day ( 41-46 mrem/day)
- Additional Personal Radiation Protection System Items on UF1 (5 “close-out” bricks and up to 5 “flats” on a “space available” basis)

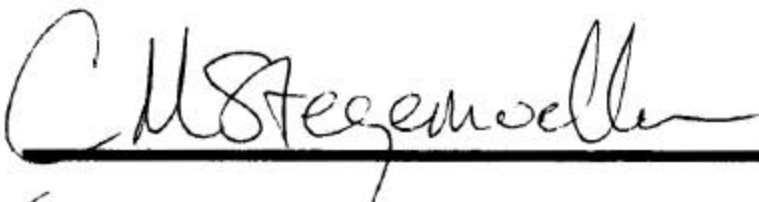





## **Certification of Flight Readiness Statement**

**The activities required to support Flight UF-1/STS-108 and 6P have been accomplished except open work identified (attachment 1) . Space and Life Sciences Directorate (SLSD) Office is ready to support Flight UF-1 and 6P.**

**There are no constraints to proceeding with the planned Flight UF-1/STS-108 and 6P pending Completion of scheduled open work.**

**David R. Williams, M.D., Director  
Space and Life Sciences Directorate**